

02/24/14 Agenda

- Warm Up
- Review Chapter 6 Test
- Retake Information
 - Remediation Packet is on my web site
 - It's due by March 3rd (next Monday)
 - Complete it, Reflection Sheet, & Missing Homework
 - You have 1 week after submitting it to take your retest
- Review Homework
 - Worksheet 7.2 day 1 - Multiplying Exponents
- Section 7.2 day 2 - Multiplying Powers
- Homework
 - Worksheet 7.2 day 2 - Multiplying Exponents

Warm Up - Homework out!



Put your name on a slip of paper.

Simplify:

$$9^5 \cdot 9^3 = 9^8 \quad (-3)^{10} \cdot (-3)^{-2} = (-3)^8$$

$$6b^3 \cdot 3b^4 = 18b^7$$

$$4c(3d^5)(2c^3) = 24c^4d^5$$

Section 7.2 - Multiplying Powers (Rational Exponents)

Target 7A

February 24, 2014

Goal: Be able to use the properties of multiplying powers with the same base.

$$x^5 = x \cdot x \cdot x \cdot x \cdot x$$

Review

Exponent \rightarrow $7^3 = 7 \cdot 7 \cdot 7$
Base \rightarrow

Product of Powers Rule:

$$a^m \cdot a^n = a^{m+n}$$

Multiply the coefficients and add the exponents

What are "rational" exponents?

$81^{\frac{1}{4}}$ ← RATIONAL EXPONENT FRACTIONS!

How do we simplify a base with a rational exponents?

$81^{\frac{1}{4}}$ Find the number that when multiplied by itself 4 times gives you 81. $81^{(1/4)}$

$$81^{\frac{1}{4}} = 3 \quad 3 \cdot 3 \cdot 3 \cdot 3 = 81$$

It's considered taking a "root" of the number.

$$81^{\frac{1}{4}} = \sqrt[4]{81} = 3$$

$$x^2 = y$$

$$x = \sqrt{y}$$

$$\sqrt[16]{256}$$

$$\sqrt[3]{125} = 125^{\frac{1}{3}}$$

$$y^{\frac{1}{2}} = x$$

$$81^{\frac{1}{4}} \cdot 81^{\frac{1}{4}} \cdot 81^{\frac{1}{4}} \cdot 81^{\frac{1}{4}} = 81$$

$$\sqrt{25} = 25^{\frac{1}{2}} = 5 \quad 5^2 = 25$$

$$2^3 = 8 \quad \sqrt[3]{8} = 2$$

$$\sqrt[2]{25} \text{ or } x^{\frac{1}{2}} = 5$$

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Examples:

Simplify the following expressions:

$$2^4$$

$$16^{\frac{1}{4}} = \sqrt[4]{16} = 2$$

$$125^{\frac{1}{3}} = \sqrt[3]{125} = 5$$

$$5^3 = 125$$

$$8^{\frac{2}{3}} = 8^{\frac{1}{3}} \cdot 8^{\frac{1}{3}} = 2 \cdot 2 = 4$$

$$64^{\frac{4}{3}} = 64^{\frac{1}{3}} \cdot 64^{\frac{1}{3}} \cdot 64^{\frac{1}{3}} \cdot 64^{\frac{1}{3}} = 4 \cdot 4 \cdot 4 \cdot 4 = 256$$

What do we do when we are multiplying?

Same rules apply!

- Multiply coefficients
- Add exponents of "like" bases

Examples:

Simplify the following expression:

$$\left(-3x^{\frac{1}{2}} \right) \left(5w^8 \right) \left(-4x^{\frac{1}{3}} \right)$$

$$-60x^{\frac{5}{6}}w^8$$

$$x^{\frac{1}{2}} \cdot x^{\frac{1}{3}}$$

$$\frac{1}{2} + \frac{1}{3} =$$

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$